

Bridge-to-Corn-Ethanol Subcontract Summary Sheet
SWAN Biomass Company
Technical Advisor: Bob Wooley

Industrial Partner: High Plains Corporation, Portales, NM (Size 10 MM gal/yr)

Other Partners: Weatherly, Inc.

Starch to Ethanol Process Information

Feedstock: Milo

Facility Capacity: 10,000,000 gal/yr

Ethanol Yield: not reported

Other Products: Dry distillers grain, CO₂ (until 1999)

Biomass Process Information

Size of Biomass Process: 11.3 MM gal/yr = 725 dry ton/day

Ethanol Yield: 45.8 gal / dry ton

Feedstock: Cotton Gin Trash

Process: Proprietary SWAN process – not reported

Fermentative Organism: not reported

Steam: Produced by natural gas boiler

Electricity: Purchased

Other Information: Cellulase enzyme is assumed purchased for \$0.50/L

Co-products: Acetic acid, wet solid residue (assumed value as animal feed)

Links with Existing Facility

Project is a retrofit of an existing corn dry mill to process cotton gin trash in place of milo. The majority of the plant areas are either removed or improved to make the feedstock change.

Capital and Operating Costs

Biomass Plant Capital Investment: \$30M = \$2.65 / annual gallon

Total Operating Costs: ≈\$1.64 / gal ethanol

Operating Costs Less Co-product Credits: \$0.80 /gal ethanol

Feedstock Cost: \$11.57 / ton = \$0.29 / gal ethanol

Chemical, enzyme and Disposal Cost: \$0.434 / gal ethanol

Proforma

Discounted rate of return: 23.5%

Net Present Value at 12% discount rate: \$8M

Ethanol Selling Price: \$1.10 / gal

Acetic Acid Selling Price: \$0.17/lb

Wet solid residue Selling Price: \$0.20 / lb protein

Plant Life: 15 years

Financing: 100% Equity

Depreciation: 10 year double declining balance/straight line

Tax element: Assume Small Producer Tax Credit available

Sensitivity Analysis

Investigated effect of:

Feedstock Cost

Byproduct solids value

No tax credit after 2007

No SPTC

Debt/Equity ratio

Feedstock Quality (amount of carbohydrate)

Strengths

Retrofit of existing plant

Small capital investment

Identified lower cost feedstock than current milo

Recommendations/Next Steps

Generate operating data using SWAN process technology on cotton gin trash feedstock

Determine variations in cotton gin trash composition

Confirm market for solid co-product; may need feedlot tests.